

## CLAIMS

What is claimed is:

1. An apparatus for rapidly screening volatile substances in a sample, said apparatus comprising:

- a) an injector;
- b) a vapor delivery line in fluid communication with said injector;
- c) a sensor element in fluid communication with said vapor delivery line and positioned downstream of said injector and said vapor delivery line, wherein all components upstream of said sensor element are substantially free of sorbent materials; and
- d) a monitor in communication with said sensor element.

2. The apparatus of claim 1, wherein said sensor element is an optical sensor element.

3. The apparatus of claim 1, wherein said sensor element is an electrochemical sensor element.

4. The apparatus of claim 1, wherein said sensor element comprises a semiconductor.

5. The apparatus of claim 1, wherein said sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of said sensor element.

6. The apparatus of claim 1, wherein said sensor element comprises a quartz crystal.

7. The apparatus of claim 5, wherein said sensor element is coated with a hard-soft block elastomer.

8. The apparatus of claim 7, wherein said sensor element is coated with a silicone polyimide.

9. The apparatus of claim 7, wherein said sensor element is coated with a block dimethylsiloxane-carbonate copolymer.

10. The apparatus of claim 5, wherein said sensor element is coated with an amorphous fluoropolymer.

11. The apparatus of claim 10, wherein said sensor element is coated with a random copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

12. The apparatus of claim 1, comprising an array of sensor elements in fluid communication with said vapor delivery line.

13. The apparatus of claim 5, wherein said monitor is adapted to receive a signal from said sensor element representing a measured property of said chemically sensitive film.

14. The apparatus of claim 13, wherein said monitor comprises a frequency counter to produce data representing said signal as a function of time.

15. The apparatus of claim 14, wherein said monitor further comprises a computer adapted to store said data.